A hitherto undescribed new species of the genus *Antheraea (Antheraea)* from the Mentawai Islands off the SW coast of Sumatra (Lepidoptera: Saturniidae)

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Abstract: The new species *Antheraea (Antheraea)* ***mentawai*** Nässig, Lampe & Kager, 2002 is described from the Mentawai Islands off the southwestern coast of Sumatra, Indonesia; holotype ♂ deposited in Senckenberg-Museum, Frankfurt am Main, Germany. Authorship is taken by these three authors, because the description was prepared by them during 1996–1998 before Dr. Stefan Kager died. The new species belongs to the complicated *mylitta/frithi*-group of species and differs in its smaller size and some colouration and genitalia details.

Eine bisher unbeschriebene Art der Gattung *Antheraea (Antheraea)* von den Mentawai-Inseln vor der südwestlichen Küste Sumatras (Lepidoptera: Saturniidae)

Zusammenfassung: Die neue Art *Antheraea (Antheraea)* ***mentawai*** Nässig, Lampe & Kager, 2002 wird von den Mentawai-Inseln vor der Südwestküste von Sumatra, Indonesien, beschrieben; der Holotypus ♂ befindet sich im Senckenberg-Museum, Frankfurt am Main. Die Autorenschaft des neuen Taxons wird von den drei angegebenen Personen übernommen, da die Beschreibung bereits in der Spanne 1996–1998 angefangen wurde, bevor Dr. Stefan Kager starb. Die neue Art gehört zur schwierigen *mylitta/frithi*-Artengruppe und unterscheidet sich durch ihre geringere Größe und einige Farb- und Genitalunterschiede.

Introduction

This is a first, preliminary supplement to the treatise on the Saturniidae fauna of Sumatra and the surrounding smaller islands within the „Heterocera Sumatrana“ series (Nässig et al. 1996). A new species of *Antheraea* is described here to make the new name available for the public — more than 5 years after a first description was published —, based on a few specimens which were received during the finishing of the main treatise, but were not intensively studied and dissected at that time. It was only during studies on the Philippine saturniid fauna (see Nässig & Treadaway 1998) in 1997 that this slightly surprising result was achieved. After discovering this, we (the authors of the 1996 Sumatra book: R. E. J. Lampe, S. Kager, and myself) decided to describe the species and name it as can be seen below. Therefore, the authorship of the new taxon is taken by Nässig, Lampe and Kager, although Dr. Stefan Kager already died on October 1st, 1998 (see Kobes 2000).

The genus *Antheraea* Hübner, 1819 (“1816”) was recently catalogued in a checklist (Paukstadt et al. 2000; also available in the internet in U. Brosch’s website www.saturniidae-mundi.de), and Naumann (2001) cleared the identity of the misidentified taxon *gschwandneri* Niepelt, 1918 and illustrated the holotype of this species (Naumann 2001: figs. 3 & 4). Therefore, most of the specimens listed and illustrated under the name *“Antheraea gschwandneri”* in our 1996 treatise must be named correctly *A. (A.) sumatrana* Niepelt, 1926 (or by other names, to be analyzed in detail later). The only “true” *A. gschwandneri* figured by us in 1996 (and the only specimen of that species before us) see on fig. 7 of Nässig et al. (1996: plate 2). The species *A. (A.) myanmarensis* U. & L. H. Paukstadt & Brosch, 1998 (recently described from southern Myanmar and Thailand) was found by Naumann (2001) to be a synonym of *A. gschwandneri*.

Further corrections and addenda to Heterocera Sumatrana vol. **10** and comments upon recent publications concerning the Sumatran Saturniidae fauna (e.g., Paukstadt et al. 1998b) will be provided in a forthcoming publication within the HS publication series.

Abbreviations and conventions follow the list of Nässig & Treadaway (1998: 229–230).

A new *Antheraea* from the Mentawai Islands

In the treatise on the Saturniidae fauna of Sumatra and the surrounding smaller islands, Nässig et al. (1996: col. pl. 15, figs. 81, 82.a, 82.b) illustrated one ♂ and two differently coloured ♀♀ of a member of the the *frithi*-subgroup (sensu Nässig 1991) of the *mylitta/frithi*-group (sensu Paukstadt et al. 2000; = *paphia/frithi*-group sensu Nässig 1991) of the genus *Antheraea (Antheraea)* from the Mentawai Islands off the southwestern coast of Sumatra under the tentative name *“Antheraea (Antheraea) ?gschwandneri”*. At that time, the specimens which were received during the finishing of the manuscript in 1995 (although collected earlier) were not yet studied into more detail due to the lack of time. Also, it was not expected that their genitalia could differ from the Sumatran species of the then so-called *“gschwandneri*-complex” (which evidently does not show marked differences in the genitalia, although we know now that it is constituted of at least two, possibly more species).

While the species of some other species-groups (e.g., the species-complex of *A. (A.) larissa* (Westwood, 1847) or the species from Sulawesi revised by Holloway et al. 1996) differ in male genitalia morphology from the species of the *frithi*-subgroup and from each other, the close relatives of *frithi* Moore, 1859 do often show no or only very small differences in this character. Therefore, many workers apply characters of other parts of the

[1] 58th contribution to the knowledge of the Saturniidae.

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body, including potentially strongly variable ones like wing pattern, colouration, size, etc. (most recent example: Naumann 2001). I shall not discuss the validity of such weak characters here into greater depth; it appears as if it may sometimes (but surely not always) be justified. Morphologically defined species based on such weak characters generally await a reconfirmation by stronger evidence, e.g., by biochemical analyses in later studies.

Nevertheless, the four specimens from the Mentawai islands discussed here differ in some external characters from the related species from mainland Sumatra: They are smaller (♂♂: lfw. 54/55 mm, ♀♀: 63/65 mm) than most of their relatives from Sumatra island (see Nässig et al. 1996: 53), and the ♂♂ are more greyish than the similar specimens later determined as *A. (A.) broschi* Naumann, 2001 by Naumann (2001). This is even smaller than, e.g., the ♂♂ of the "small" species *A. (A.) gulata* Nässig & Treadaway, 1998 from Palawan, the Philippines (see Nässig & Treadaway 1998: 378).

The genitalia in *Antheraea* generally (with only few exceptions, e.g., in the species-complex of *larissa*) do not differ much in size within one species in spite of sometimes remarkable differences in lfw. of the conspecific specimens compared. So the fact that the genitalia's size of the single dissection (no. 1139/97 W. Nässig) from Mentawai is definitively smaller than that of Sumatran specimens of *A. sumatrana* dissected so far is a further hint that this is a new species.

There appears to be a general tendency to show differences in the overall size of the ♂ genitalia (while the structure is more or less the same) between closely related *Antheraea* species of the *frithi*-subgroup. The species of the *frithi*-subgroup might to a certain degree (I have not yet compared this aspect in all of the species) be classified into two classes of ♂ genitalia size: Species of the "big genitalia type" are, for example, *Antheraea (Antheraea) mylitta* (Drury, 1773) [a member of the *mylitta*-subgroup], *frithi, platessa* Rothschild, 1903, *sumatrana, celebensis* Watson, 1915, and *rumphii* (Felder, 1861). Species of the "small genitalia type" comprise, e.g., *A. (A.) semperi* C. & R. Felder, 1861, *brunei* Allen & Holloway, 1986, *gulata,* and the new one described here:

Antheraea (Antheraea) mentawai Nässig, Lampe & Kager, n. sp.

= *Antheraea (Antheraea) ?gschwandneri:* Nässig et al. (1996: 53, 102).

For colour illustrations see Nässig et al. (1996: colour plate 15, figs 81 [paratype], 82.a, 82.b).

Figs. 1 (holotype ♂), 2 (♂ HT genitalia).

Holotype: ♂, "Indonesien, Sumatra: Mentawai-Inseln, Pagai Utara, Sikakap, Feb. 1992, leg. E. W. Diehl"; GP (dissection no.) 1139/97 W. Nässig/Senckenberg, SMFL-no. 4161 (Fig. 1). Ex coll. W. A. Nässig/HSS in the collection of the Senckenberg-Museum, Frankfurt am Main.

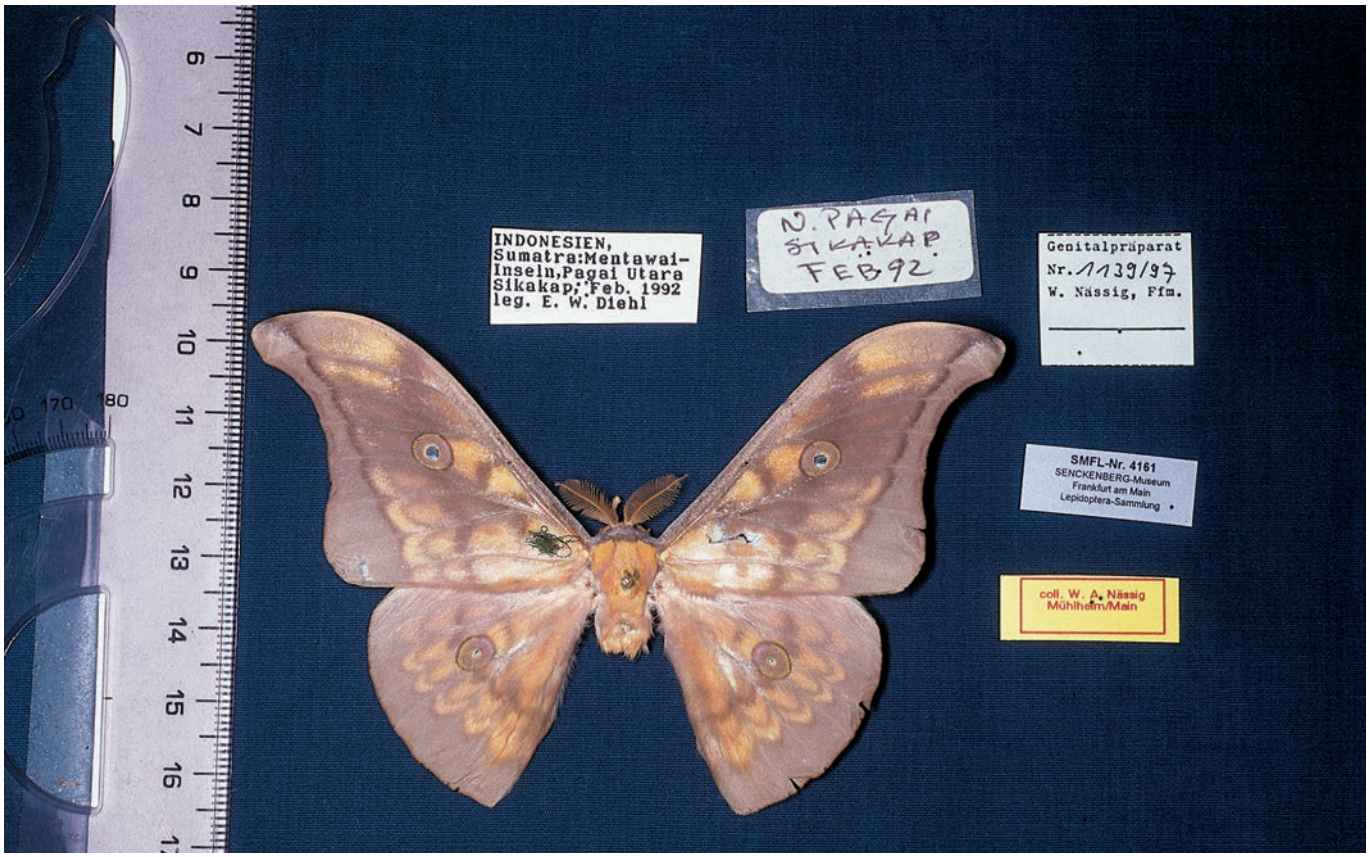

Fig. 1: Holotype ♂ of *Antheraea (Antheraea) mentawai* Nässig, Lampe & Kager, 2002. For color pictures of the other ♂ specimen and the two ♀♀, see Nässig et al. (1996: 103, figs. 81, 82.a, 82.b). — Photograph W. Nässig.

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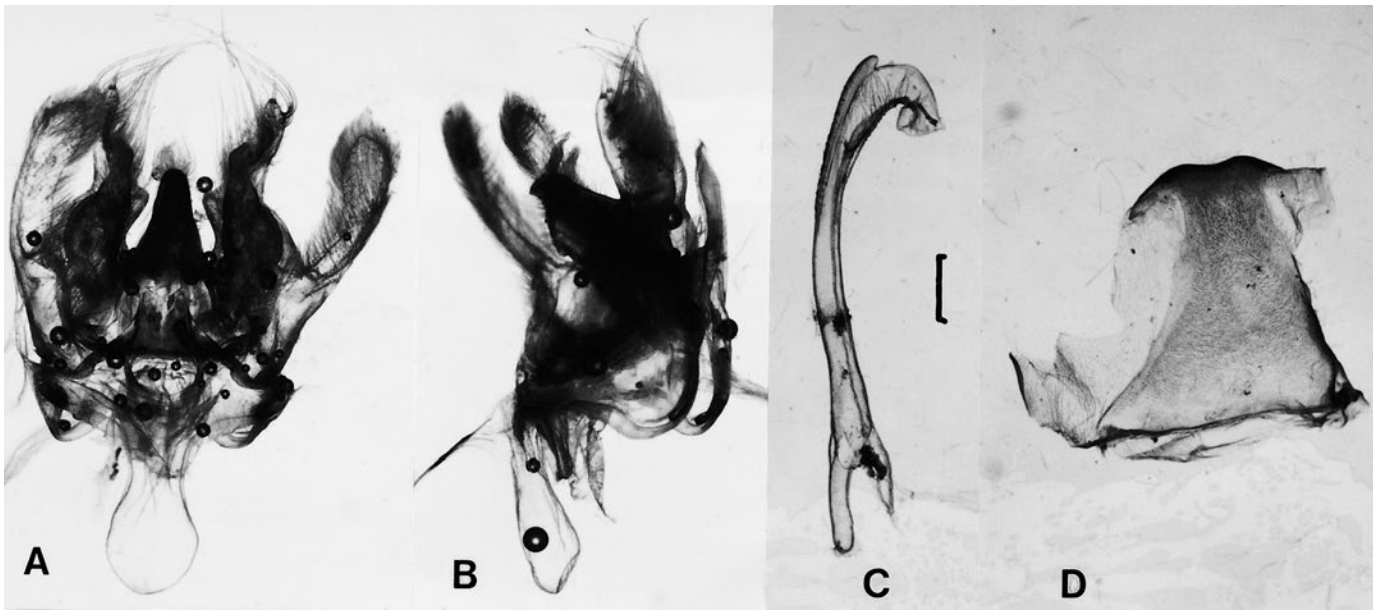

Fig. 2: ♂ genitalia of *Antheraea (Antheraea) mentawai* Nässig, Lampe & Kager, 2002, holotype (GP [dissection-no.] 1139/97 Nässig). Photographs taken in fluid (70% ethanol; this explains the little gas bubbles), genitalia not embedded on glass slide. **Figs. 2A/B:** genitalia (A ventral view, B lateral view), **Fig. 2C:** aedeagus, **Fig. 2D:** the "hood" of the 8th abdominal tergite. — Scale: 1 mm, valid for all pictures. — Photographs W. Nässig.

Paratypes (1 ♂, 2 ♀♀): 1 ♂, 1 ♀, same data as holotype. 1 ♀, "Sumatra, Mentawai Isl., 23. xii. 1992, Widagdo/Dr. Diehl leg., coll. Dr. Kobes". All (via CWAN) in SMFL; the paratype ♂ will later be given to Museum Zoologicum Bogoriense.

Derivatio nominis: The new species is named after the collecting locality, the Mentawai islands (Kepulauan Mentawai) within the Paramalayan subregion of the zoogeographical area of Sundaland (see Nässig & Treadaway 1998: 231); the name is a noun in apposition (similar to *brunei*). — The name of the new taxon *mentawai* is coauthored by the author of the present publication, by Rudolf E. J. Lampe, and by the deceased Dr. Stefan Kager posthumously, because we alltogether began the work on this first supplement presented here just shortly after the time of publication of our 1996 work, and this name was already fixed in 1997 by the three of us.

Diagnosis

As written above, the new species can most easily be identified from the small size, the greyish tinge of the ground colour (at least in the ♂♂ and in the reddish variant of the ♀) over a general wing colouration like in *A. broschi,* and by relatively small ♂ genitalia. Also, it is presently the only member of the *frithi*-subgroup known from the islands off the southwestern coast of Sumatra (Kepulauan Mentawai).

Discussion

The yellow female appears to be no more than a colour variant of *A. mentawai*. We do not expect two different, very similar and closely related species of the same group and of the same small size on the Mentawai islands. All four specimens are largely similar also on the underside.

The new species is known from Pagai Utara of the Kepulauan Mentawai only thus far. The second, yellow ♀ has no island data on the label. We do not know which of the islands off the southwestern coast of Sumatra are inhabited by *Antheraea mentawai*.

This area belongs to the zoogeographical subregion Paramalaya (Toxopeus 1926) of Sundaland (see also Nässig & Treadaway 1998) and during the most recent glaciation periods of the ice age was not always connected with mainland Sumatra (Whitten et al. 1987, 2000). Other *Antheraea* from these islands known to us (compare Nässig et al. 1996) are some specimens of the Sumatran member of the *helferi*-species group and possibly *diehli* Lemaire, 1979 (see Buchsbaum & Brüggemeier 1996) from Nias; no further *Antheraea* from these islands are known at present. The southern islands (Kepulauan Mentawai and, especially, Pulau Enggano) as well as P. Simeuluë in the North are separated from Sumatra by deeper water than P. Nias and PP. Batu today. Populations of less mobile organisms (like Saturniidae) on these islands will, therefore, be isolated from their relatives of the Sumatran mainland populations for a longer time on average. However, the isolation is, of course, not as complete as can be found, e.g., on the Andaman islands, where as a consequence, the degree of endemicity of the saturniid fauna is much higher (Brechlin 2002).

This "outer arc" along the SW coast of Sumatra, which is geologically continuous with the Nicobar and Andaman islands and the western Burmese mountain chain to the North (Tjia 1980, Hutchinson 1989), possibly may have been much larger and more or less continuous above sea level at Tertiary times about 20 Ma and less ago, when the Indian plate drifted along its southwestern limits, thereby possibly pushing this arc up above the sea level. However, geological and paleogeographical sources are partly contradictory about this subject (see, e.g., the contributions in Hall & Blundell 1996 and Hall & Hollo-

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WAY 1998); this eastern margin of the Indian Ocean ist characterized by several small terranes which have had their individual geological history. This obscures the geological history of the area and makes mesozoic and cenozoic reconstructions of — especially — smaller islands (and even more so, whether they have always been dry land or below the sea level sometimes) very difficult.

The *Antheraea*-species of the *frithi*-subgroup with the "small genitalia" (if this is accepted as a specific character) are largely allopatric and show comparatively small distribution ranges. In contrast, under the "big genitalia" taxa there are several widely distributed species (or species-complexes), and several of these species overlap in their distribution. Therefore, it may be speculated that the "big genitalia" type is the plesiomorphic construction within the *mylitta/frithi*-group, and the deviations from that groundplan will most likely be different apomorphic character states (see also discussion in NÄSSIG & TREADAWAY 1998). It must here be emphasized that it is presently not clear whether the "small genitalia" type as a whole describes a monophyletic unit within the *frithi*-subgroup of *Antheraea (Antheraea)* or not. Although we expect that the eastern "small genitalia" taxa from Borneo etc. (*brunei*), Palawan (*gulata*) and the Philippines proper (*semperi*) are very closely related species (see NÄSSIG & TREADAWAY 1998), it may well be that *A. mentawai* is the result of an independent evolutionary process. (The status and identity of *A. billitonensis* MOORE, 1878 still remains somehow enigmatic at present.)

The number of Saturniidae species known from Sumatra and adjacent smaller islands is thereby increased by two (splitting of *A. gschwandneri/A. sumatrana* and *A. mentawai;* the problems with other *Antheraea* species will be discussed later within the series Heterocera Sumatrana) and presently counts for 26 species at minimum.

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